

- 1        1. A capacitor of the type having a cathode and an anode and an electrolyte  
2        disposed between the cathode and the anode, the capacitor comprising  
3                an electrochemical cathode comprising an aluminum current collector coated with  
4        a finely divided material,  
5                an electrolytic anode comprising aluminum coated with aluminum oxide,  
6                an electrolyte in contact with the finely divided material on the cathode and the  
7        aluminum oxide on the anode.
- 1        2. The capacitor of claim 1 wherein the electrolyte is substantially non-aqueous.
- 1        3. The capacitor of claim 2 wherein the electrochemical cathode functions by  
2        forming a double layer of charge at the interface between the finely divided material and  
3        the substantially non-aqueous electrolyte.
- 1        4. The capacitor of claim 2 wherein the finely divided material comprises carbon  
2        particles.
- 1        5. The capacitor of claim 4 wherein the carbon particles comprise at least one of  
2        carbon powder, carbon fibers, and graphite.
- 1        6. The capacitor of claim 2 wherein the electrochemical cathode functions by the  
2        presence of an oxidation reduction reaction within the finely divided material.
- 1        7. The capacitor of claim 2 wherein the electrochemical cathode comprises a  
2        metal oxide coating.
- 1        8. The capacitor of claim 2 wherein the metal oxide coating is ruthenium oxide.
- 1        9. The capacitor of claim 2 wherein the metal oxide is hydrous amorphous  
2        ruthenium oxide powder adhered to the aluminum current collector.
- 1        10. The capacitor of claim 2 wherein the cathode further comprises an adhesion  
2        layer between the finely divided material and the aluminum.

1           11. The capacitor of claim 10 wherein the adhesion layer comprises a carbon  
2   rubber coating.

1           12. The capacitor of claim 11 wherein the adhesion layer is from 0.5 to 2.0 mil  
2   thick.

1           13. The capacitor of claim 12 wherein the electrochemical capacitor comprises a  
2   metal oxide adhered to the aluminum with the adhesion layer.

1           14. The capacitor of claim 13 wherein the metal oxide is hydrous amorphous  
2   ruthenium oxide powder.

1           15. The capacitor of claim 2 wherein the substantially non-aqueous electrolyte  
2   comprises an ethylene glycol solvent.

1           16. The capacitor of claim 2 wherein the anode has a larger surface area than the  
2   cathode.